

WHAT IS CLAIMED IS:

1. A process for generating a knowledge code which is used in a knowledge-based system comprising the steps of:

converting a text which is described in a natural language

5 into a knowledge code; and

inputting said knowledge code into said knowledge-based system, said step of converting said text into said knowledge code comprising the steps of preparing an intermediate knowledge code which represents knowledge of an object field and does not depend on said knowledge-based system, from the description of said text which is described in a natural language in accordance with intermediate knowledge code generating rules and converting said intermediate knowledge code into said knowledge code which can be used in said knowledge-based system in accordance with said knowledge code generating rules.

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2. A process for generating a knowledge code which is used in a knowledge-based CAD, comprising the steps of:

converting a design document into a knowledge code; and

inputting said knowledge code into said knowledge-based CAD, said step of converting said design document into said knowledge code comprising the steps of preparing an intermediate knowledge code which represents knowledge of a design object field and does not depend upon said knowledge-based CAD, from the description of said design document which is described in a natural language in

accordance with intermediate knowledge code generating rules and converting said intermediate knowledge code into said knowledge code in accordance with said knowledge code generating rules.

5       3. A process for generating a knowledge code as claimed in claim 2, wherein said step of preparing said intermediate knowledge code comprises the steps of conducting a morphological analysis or syntactic analysis for the description of the design document which is described in a natural language and preparing said  
10 intermediate knowledge code which matches morphological information and syntactic information in accordance with said intermediate knowledge code generating rules based upon the morphological information or syntactic information which is obtained by said morphological analysis or said syntactic analysis.

15      4. A process for generating a knowledge code as claimed in claim 3, wherein at the step of converting said intermediate knowledge code into said knowledge code in accordance with said knowledge code generating rules, said knowledge code is a CAD codes used for  
20 said knowledge-based CAD, and in order to convert said intermediate presentation code into said CAD code used for a plurality of different knowledge-based CADs, said intermediate knowledge code is converted into a plurality of different CAD codes in accordance with a plurality of different knowledge-based code generating rules.

5. A process for generating a knowledge code as claimed in  
claim 4, wherein after the step of converting said intermediate  
knowledge code into said knowledge code in accordance with said  
5 knowledge code generating rules, said knowledge code is reconverted  
into said intermediate knowledge code by using a knowledge code  
compiler and further said intermediate knowledge code is converted  
into different knowledge codes by using different knowledge code  
generating rules.

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6. A system for generating a knowledge code used for a  
knowledge-based system, comprising a knowledge code generator for  
converting a text which is described in a natural language into  
a knowledge code and a knowledge code input means for inputting  
15 said knowledge code to said knowledge-based system, said knowledge  
code generator including an intermediate knowledge code generating  
unit for generating an intermediate knowledge code which represents  
the knowledge of an object field and does not depend on said  
knowledge-based system, from the description of the text which is  
20 described in a natural language in accordance with intermediate  
knowledge code generating rules and a knowledge code converting  
unit for converting said intermediate knowledge code into a knowledge  
code which can be used in said knowledge-based system in accordance  
with knowledge code generating rules.

7. A knowledge code generating system for generating a knowledge code used for a knowledge based CAD as claimed in claim 6, wherein said knowledge code generator comprises an intermediate 5 knowledge code generating unit for generating an intermediate knowledge code which represents the knowledge of design object field and does not depend on said knowledge-based CAD, from the description of the design document which is described in a natural language in accordance with said intermediate knowledge code generating rules 10 and a knowledge code converting unit for converting said intermediate knowledge code into said knowledge code in accordance with said knowledge code generating rules of said knowledge-based CAD.

8. A knowledge code generating system as claimed in claim 15 7, wherein said intermediate knowledge code generating unit conducts a morphological analysis or syntactic analysis for the description of said design document which is described in a natural language and generates an intermediate knowledge code which matches morphologic information or syntactic information in accordance with said 20 intermediate knowledge code generating rules based upon the morphological information or syntactic information which is obtained by said morphological analysis or said syntactic analysis.

9. A knowledge code generating system as claimed in claim

8, wherein for converting said intermediate knowledge code into  
a plurality of different CAD codes in accordance with a plurality  
of different knowledge code generating rules in said knowledge code  
converting unit, said intermediate knowledge code is converted into  
5 said CAD code used for a plurality of different knowledge-based  
CADs.

10. A knowledge code generating system as claimed in claim  
9, wherein said knowledge code generator reconverts said knowledge  
10 code into said intermediate knowledge code by using a knowledge  
code compiler after conversion of said intermediate knowledge code  
into said knowledge code in accordance with said knowledge code  
generating rule and converts said intermediate knowledge code into  
different knowledge code in accordance with said knowledge code  
15 generating rule.

11. A process for producing a knowledge code which is used  
in a knowledge-based system, characterized in that said process  
comprises the steps of:

20 preparing a text which is described in a natural language by  
means of a text description assistant system;  
converting said text into an intermediate knowledge code;  
converting said intermediate knowledge code into a knowledge  
code; and

inputting said knowledge code into said knowledge-based system,  
and

in that said text describing assistant system is adapted to  
prepare said text by inputting describing items in accordance with  
5 a preliminarily provided text description procedure, said steps  
of converting said text into said intermediate knowledge code converts  
the description of a formal text into said intermediate knowledge  
code which corresponds to said formal text and does not depend upon  
said knowledge-based system, said step of converting said intermediate  
10 knowledge code into said knowledge code converts said intermediate  
knowledge code into said knowledge code which can be used in said  
knowledge-based system in accordance with knowledge code generating  
rules.

15        12. A process for converting a knowledge code used in a  
knowledge-based system into a text which is described in a natural  
language, characterized in that said knowledge code is output from  
said knowledge-based system, said output knowledge code being  
converted into said intermediate knowledge code which does not depend  
20 upon said knowledge-based system by using an intermediate knowledge  
code converting unit and said intermediate knowledge code being  
converted into said text corresponding to said intermediate knowledge  
code by using a document description generating unit.

13. A process for producing a knowledge code as claimed in claim 11, wherein at the steps of preparing a text which describes the knowledge of an object field in a natural language by using said text description assistant system and converting said text 5 into said intermediate knowledge code, said process further includes the step of preparing an intermediate knowledge code which does not depend upon said knowledge base system, from the description of the text which is described in a natural language and is prepared without using said text description assistant system in accordance 10 with intermediate knowledge code generating rules.

14. A process for generating a CAD knowledge code used in a knowledge-based CAD, characterized in that said process comprises the step of:

15 preparing a design procedure document which is described in a natural language by a design procedure document description assistance system; converting said design procedure document into an intermediate knowledge code, converting said intermediating code into a CAD knowledge code and inputting said CAD knowledge code 20 into said knowledge-based CAD,

said design procedure document description assistance system being adapted to describe said design procedure document by selecting and inputting description items of said design procedure document in accordance with preliminarily provided description rules,

said step of converting said design procedure document into  
    said representation code converting the description of said design  
    procedure document into said intermediate knowledge code which  
    corresponds to the description of said design procedure document  
5     and does not depend upon said knowledge-based CAD,

    said step of converting said intermediate knowledge code into  
    said knowledge code converting said intermediate knowledge code  
    into said CAD knowledge code which can be used in said knowledge-based  
    CAD in accordance with knowledge code generating rules.

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15. A process for generating a knowledge code as claimed  
    in claim 14, wherein said design procedure document description  
    assistance system selects formal texts which constitute preliminarily  
    provided design procedure document, a number of formal texts are  
15     preliminarily classified and prepared so that the design procedure  
    document can be prepared by sequentially selecting the description  
    procedure of said formal texts and each formal text of said design  
    procedure document corresponds to the intermediate knowledge code.

20       16. A process for converting a CAD knowledge code used in  
    a CAD knowledge-based system into a design procedure document which  
    is described in a natural language, characterized in that said CAD  
    knowledge code is output from said knowledge-based CAD system, said  
    output CAD knowledge code being converted into said intermediate

knowledge code which does not depend upon said knowledge-based system by using an intermediate knowledge code converting unit and said intermediate knowledge code being converted into said design procedure document comprising formal texts corresponding to said intermediate

5 knowledge code by using a document description generating unit.

17. A process for generating a knowledge code as claimed in claim 14, wherein at the steps of preparing the design procedure document which describes the knowledge of an object field in a natural language by using the design procedure document description assistance system, and converting said design procedure document into said intermediate knowledge code, said process further comprises the step of conducting a morphological analysis or syntactic analysis of the description of said design procedure document which is prepared without using said design procedure document description assistance system and is described in a natural language and preparing said intermediate knowledge code which does not depend on said knowledge-based CAD in accordance with said intermediate knowledge code generating rules based upon morphological information or 15 syntactic information which is obtained by said morphological analysis or syntactic analysis.

18. A process for generating CAD knowledge codes as claimed in claim 17, wherein in order to convert said intermediate knowledge

code into said CAD knowledge codes used for a plurality of different said knowledge-based CADs, said intermediate knowledge code is converted into the plurality of different said CAD knowledge codes in accordance with a plurality of different knowledge code generating  
5 rules.

19. A knowledge code generating system for generating a knowledge codes used in a knowledge-based system, characterized in that

10 said knowledge code generating system comprises a text generating unit for preparing a text which is described in a natural language by means of a text description assistance system, an intermediate knowledge code generating unit for converting said text into an intermediate knowledge code, a knowledge code converting  
15 unit for converting said intermediate code into a knowledge code and a knowledge code input unit for inputting said knowledge code into said knowledge-based system,

said text generating unit is adapted to describe said text by using a text preparing tool which prepares a text using formal  
20 texts by inputting description items in accordance with preliminarily provided text description procedure,

said intermediate code converting unit is adapted to convert the description of said formal text of said text into said intermediate knowledge code which corresponds to said formal text and does not

depend on said knowledge-based system, and  
said knowledge code converting unit is adapted to convert said  
intermediate knowledge code into said knowledge code which can be  
used in said knowledge-based system by using a knowledge code  
5 generating rules.

20. A knowledge code converting system for converting a  
knowledge code used in a knowledge-based system into a text which  
is described in a natural language, characterized in that  
10 said knowledge code converting system comprises a knowledge  
code output unit for outputting said knowledge code from said  
knowledge-based system, an intermediate knowledge code converting  
unit for converting said output knowledge code into an intermediate  
knowledge code which does not depend on said knowledge-based system  
15 and a document description generating unit for converting said  
intermediate knowledge code into a text including said intermediate  
knowledge code and corresponding formal texts, which is described  
in a natural language.

20 21. A knowledge code generating system for generating a  
knowledge code used in said knowledge-based system as claimed in  
claim 18, further comprising a unit for preparing an intermediate  
knowledge code which represents the knowledge of an object field  
and does not depend upon said knowledge-based system from the

description of a text which is prepared without using said text  
description assistance system and is described in a natural language  
in accordance with an intermediate knowledge code generating rules  
in addition to said text generating unit for preparing the text  
5 which is described in a natural language by the text description  
assistance system and said intermediate knowledge code generating  
unit for converting said text into said intermediate knowledge code.

22. A knowledge generating system which is used in a  
knowledge-based CAD, comprising a design procedure document  
generating unit for preparing a design procedure document which  
is described in a natural language by a design procedure document  
description assistance system, and an intermediate knowledge code  
generating unit for converting said design procedure document into  
15 an intermediate knowledge code, a CAD code converting unit for  
converting said intermediate knowledge code into a CAD knowledge  
code and a knowledge code input unit for inputting said CAD knowledge  
code into said knowledge-based CAD,

said design procedure document generating unit is adapted to  
20 describe said design procedure document by using a design procedure  
document preparing tool for preparing a design procedure document  
by inputting design items in accordance with preliminarily provided  
description rules of the design procedure document,

said intermediate knowledge code generating unit is adapted

to convert the description of said design procedure document into  
said intermediate knowledge code which corresponds to the description  
of said design procedure document and does not depend on said  
knowledge-based CAD, and said CAD code converting unit is adapted  
5 to convert said intermediate knowledge code into said knowledge  
code which can be used in said knowledge-based CAD by using a knowledge  
code generating rules.

23. A knowledge code generating system for generating a  
10 knowledge code as claimed in claim 22, wherein said design procedure  
document generating unit selects formal texts which constitute  
preliminarily provided design procedure document, and a number of  
said formal texts are preliminarily classified and prepared so that  
the design procedure document can be prepared by sequentially  
15 selecting the description procedure of said formal texts and each  
description item of said design procedure document corresponds to  
the intermediate knowledge code.

24. A system for converting a CAD knowledge code used in  
20 a knowledge-based CAD into a design procedure document which is  
described in a natural language, characterized in that said system  
comprises

an intermediate knowledge code converting unit for outputting  
said knowledge CAD code from said knowledge-based CAD to convert

said CAD knowledge code into said intermediate knowledge code which does not depend on said knowledge-based CAD, and

a document description generating unit for converting said intermediate knowledge code into said design procedure document

5 including said intermediate knowledge code and corresponding formal text.

25. A system for generating a knowledge code as claimed in claim 22, wherein in addition to the design procedure document preparing unit for preparing the design procedure document which is described in a natural language and the intermediate knowledge code generating unit for converting said design procedure document into said intermediate knowledge code, said system further comprises a unit for conducting a morphological analysis or syntactic analysis 10 of the description of said design procedure document which is prepared without using said design procedure document description assistance system and is described in a natural language and for preparing said intermediate knowledge code which does not depend on said knowledge-based CAD in accordance with said intermediate knowledge 15 code generating rules based upon morphological information or syntactic information which is obtained by said morphological analysis or syntactic analysis.